CP7674 DIGITAL MULTITESTER INSTRUCTION MANUAL

SAFETY GUIDELINES

Your Digital Multitester is designed for both home and automotive use. The following Safety Guidelines are provided when it is used for engine or vehicle testing. To prevent accidents that could result in serious injury and/or damage to your vehicle or test equipment, carefully follow these safety rules and test procedures.

SAFETY EQUIPMENT

Fire Extinguisher
Never work on your car without having a suitable fire extinguisher handy. A 5-lb or larger CO_2 or dry chemical unit specified for gasoline/chemical/electrical fires is recommended.

Fireproof Container
Rags and flammable liquids should be stored only in fireproof, closed metal containers. A gasoline-soaked rag should be allowed to dry thoroughly outdoors before being discarded.

Safety Goggles
We recommend wearing safety goggles when working on your car, to protect your eyes from battery acid, gasoline, and dust and dirt flying off moving engine parts.
NOTE: Never look directly into the carburetor throat while the engine is cranking or running, as sudden backfire can cause burns.

LOOSE CLOTHING AND LONG HAIR (MOVING PARTS)
Be very careful not to get your hands, hair or clothes near any moving parts such as fan blades, belts and pulleys or throttle and transmission linkages. Never wear neckties or loose clothing when working on your car.

JEWELRY
Never wear wrist watches, rings or other jewelry when working on your car. You'll avoid the possibility of catching on moving parts or causing an electrical short circuit which could shock or burn you.

VENTILATION
The carbon monoxide in exhaust gas is highly toxic. To avoid asphyxiation, always operate vehicle in a well-ventilated area. If vehicle is in an enclosed area, exhaust should be vented directly to the outside via leakproof exhaust hose.

SETTING THE BRAKE
Make sure that your car is in **Park** or **Neutral**, and that the **parking brake is firmly set.**

NOTE: Some vehicles have an automatic release on the parking brake when the gear shift lever is removed from the PARK position. This feature must be disabled when it is necessary (for testing) to have the parking brake engaged when in the DRIVE position. Refer to your vehicle service manual for more information.

HOT SURFACES
Avoid contact with hot surfaces such as exhaust manifolds and pipes, mufflers (catalytic converters), radiator and hoses. Never remove the radiator cap while the engine is hot, as escaping coolant under pressure may seriously burn you.

SMOKING AND OPEN FLAMES
Never smoke while working on your car. Gasoline vapor is highly flammable, and the gas formed in a charging battery is explosive.

BATTERY
Do not lay tools or equipment on the battery. Accidentally grounding the "HOT" battery terminal can shock or burn you and damage wiring, the battery or your tools and testers. Be careful of contact with battery acid. It can burn holes in your clothing and burn your skin or eyes.
When operating any test instrument from an auxiliary battery, connect a jumper wire between the negative terminal of the auxiliary battery and ground on the vehicle under test. When working in a garage or other enclosed area, auxiliary battery should be located at least 18 inches above the floor to minimize the possibility of igniting gasoline vapors

HIGH VOLTAGE
High voltage – 30,000 to 50,000 volts – is present in the ignition coil, distributor cap, ignition wires and spark plugs. When handling ignition wires while the engine is running, use insulated pliers to avoid a shock. While not lethal, a shock may cause you to jerk involuntarily and hurt yourself.

JACK
The jack supplied with the vehicle should be used only for changing wheels. Never crawl under car or run engine while vehicle is on a jack.

VEHICLE SERVICE INFORMATION

The following is a list of publishers who have service manuals for your specific vehicle. Write or call them for availability and prices, specifying the make, style, model year and VIN (Vehicle Identification Number) of your vehicle.

ORIGINAL EQUIPMENT MANUFACTURERS' VEHICLE SERVICE MANUALS

American Motors, Chrysler Corporation, Nissan, North America
Dyment Distribution Services
20770 Westwood Drive
Strongsville, OH 44136
(216) 572-0725

Buick
Tuar Company
Post Office Box 354
Flint, MI 48501

Cadillac, Chevrolet, Pontiac
Helm Incorporated
Post Office Box 07130
Detroit, MI 48207

Ford Publications Dept.
Helm Incorporated
Post Office Box 07150
Detroit, MI 48207

Honda Motor Co., Ltd.
Helm Incorporated
Post Office Box 07280
Detroit, MI 48207
(313) 883-1430

Oldsmobile
Lansing Lithographers
Post Office Box 23188
Lansing, MI 48909

Toyota Motor Corporation
Toyota Service Publications
750 W. Victoria St.
Compton, CA 90220-5538
CA residents:
1-800-443-7656
Outside CA:
1-800-622-2033

AFTERMARKET VEHICLE SERVICE MANUALS

Chilton Book Company
Chilton Way
Radnor, PA 19089

Cordura Publications
Mitchell Manuals, Inc.
Post Office Box 26260
San Diego, CA. 92126

Motor's Auto Repair Manual
Hearst Company
250 W. 55th Street
New York, NY 10019

DESCRIPTION AND SPECIFICATIONS

DESCRIPTION: The Digital Multitester is a compact, hand-held, easy to use precision instrument which is compatible both with home electrical applications, as well as the electrical systems used in modern passenger cars and trucks. It may also be used to measure voltages in the computer control circuits of computer-controlled vehicles.

SPECIFICATIONS:

Display – 3 1/2 digit, .5 inch LCD (Liquid Crystal Display)

Automatic Polarity Sensing – Display shows a minus (-) sign on the DC Volts and Amps functions when lead hookup is reversed.

Zero adjustment – Unit automatically zeroes on the Volts and Amps functions.

Overrange indication – Left side of display shows either "1" or "-1" when range in a function is exceeded.

Operating temperature – 0°C - 35°C (32°F - 95°F), 0-80% R.H.; 35°C - 50°C (95°F - 122°F), 0-70% R.H.

Measurement rate – 2.5 measurements per second, nominal

Power – Nine (9) volt alkaline or carbon zinc battery

Battery life – Alkaline: 200 hours typical
Carbon zinc: 100 hours typical

Accessories – Test leads (pair), instruction manual

FUNCTIONS AND DISPLAY:

The analyzer provides the following functions and displays them as indicated.

OFF - To preserve battery life always return the rotary switch to OFF when testing is complete.

Accuracies are ± (% reading + No. of digits) at 23°C ± 5°C (75°F ± 3°F), less than 75% R.H.

AC Volts

Range	Resolution	Accuracy (45Hz-450Hz)	Overvoltage Protection
200V	100mV	± (1.2% rdg + 5 dgts)	DC 750V
750V	1V		AC 750V

Input Impedance: 450K

DC Volts

Range	Resolution	Accuracy	Overvoltage Protection
200mV	100µV	± (0.75% rdg + 2 dgts)	DC 500V AC 350V
2000mV	1mV		DC 1100V AC 800V
20V	10mV		
200V	100mV		
1000V	1V		

Input Impedance: 10mΩ

DC Current

Range	Resolution	Accuracy	Voltage Burden
200µA	0.1µA	± (1.2% rdg + 2 dgts)	250mV rms Max.
2000µA	1µA		
20mA	10µA		
200mA	100µA		
2000mA	1mA	± (1.5% rdg + 2 dgts)	700mV rms Max.

Overload protection: mA Input: 2A/250V fuse

DC 10A

Range	Resolution	Accuracy	Voltage Burden
10A	100mA	± (1.5% rdg + 3 dgts)	300mV rms Max.

Overload protection: unfused up to 10A for 15 seconds

Resistance

Range	Resolution	Accuracy	Max. Open Circuit Voltage
200Ω	0.1Ω	± (1.0% rdg + 4 dgts)	3.2V
2000Ω	1Ω		
20KΩ	10Ω		
200KΩ	100Ω		
2000KΩ	1KΩ		

Diode Check

Use this test to check for open or shorted diodes. A good diode will show a low reading with the test leads connected in one polarity, and a high reading with the test leads connected in the other polarity. The low reading will be typically some three-digit number on the display (for example: .673). The actual number is not critical. The high reading should be infinity (1.).

PRECAUTIONS AND PREPARATION FOR MEASUREMENT:

1. Be sure that a fresh nine (9) volt battery is correctly installed in the multitester.
2. Compare the position of the selector switch with the anticipated test result. In the case of voltage or current measurement, always select a range which is high enough to handle the worst case result! Voltage or current may be higher than you expect.
3. The **BLACK** test lead is always inserted in the **COM**mon jack on the multitester. The **RED** test lead must be inserted in either the **V**olts Ω(ohms) **m**illi**A**mps jack, or the **10 A**mps jack depending on the test being performed. **Incorrect placement of the RED test lead may damage the multitester, the circuit under test, or both!**
4. **The 10 Amp range on the multitester is not fused. Exercise extreme caution!**
5. Operate the multitester only in temperatures between 0°C and 50°C (32°F - 122°F), and at 80% or less relative humidity.
6. Turn the SELECTOR switch to the OFF position when testing is completed. If the multitester will not be used for an extended period of time, remove the internal nine (9) volt battery to avoid damage from leakage.
7. Do not store the multitester in direct sunlight, or in areas of high temperature or high humidity.

MEASUREMENT PROCEDURES:

1. VOLTAGE MEASUREMENT

a. Set the SELECTOR switch to the required AC or DC voltage position.
b. Plug the **BLACK** test lead into the **COM**mon input jack on the multitester.
c. Plug the RED test lead into the **V**olts Ω (ohms) **m**illi**A**mps input jack on the multitester.
d. Connect the test leads to the circuit under test, observing proper polarity when measuring DC voltage.
e. Read the result on the digital display. If the display reads overrange (1.), switch to a higher range within the appropriate AC or DC function.

2. DC MILLIAMP MEASUREMENT

a. Set the SELECTOR switch to the required DC milliamp position.
b. Plug the **BLACK** test lead into the **COM**mon input jack on the multitester.
c. Plug the **RED** test lead into the **V**olts Ω (ohms) **m**illi**A**mps input jack on the multitester.
d. Connect the test leads to the circuit under test, observing proper polarity.
e. Read the results on the digital display. If the display reads overrange (1.), switch to a higher range within the milliamps function.

3. DC 10 AMPS MEASUREMENT

a. Set the SELECTOR switch to the **10 A**mps position.
b. Plug the **BLACK** test lead into the **COM**mon input jack on the multitester.
c. Plug the **RED** test lead into the **10 A**mps input jack on the multitester.
d. Connect the test leads to the circuit under test, observing proper polarity.
e. Read the result on the digital display.

4. RESISTANCE MEASUREMENT

a. Set the SELECTOR switch to the required resistance Ω (ohms) position.
b. Plug the **BLACK** test lead into the **COM**mon jack on the multitester.
c. Plug the **RED** test lead into the **V**olts Ω (ohms) **m**illi**A**mps input jack on the multitester.
d. Connect the test leads to the circuit under test.
e. Read the result on the digital display. If the display reads overrange (1.), switch to a higher range within the resistance function.

5. DIODE CHECK

a. Set the SELECTOR switch to the diode →|← position.
b. Plug the **BLACK** test lead into the **COM**mon input jack on the multitester.
c. Plug the **RED** test lead into the **V**olts Ω (ohms) **m**illi**A**mps input jack on the multitester.
d. Connect the test leads to the diode under test. The diode must be removed from the circuit to achieve proper results.
e. Read the result on the digital display.
f. Reverse the test lead connections at the diode.
g. Read the result on the digital display.
h. A good diode will show a low reading with the test leads connected one way, and infinity (1.) with the test leads connected the other way. The low reading will typically be some three-digit number on the display. The actual number is not critical.

FUSE REPLACEMENT:

All milliamp ranges of this mlititester are fuse protected. Should you exceed 2 amperes of current flow in any of these ranges, the fuse may open. To maintain safe operation of the multitester, replace it only with a 2 Amp, 250 Volt, 5mm x 20mm fast-acting glass fuse. Replace the fuse as follows:

1. Turn the SELECTOR switch OFF.
2. Remove the bottom case half.
3. Remove the battery.
4. Using a small blade screwdriver or other suitable tool, gently pry the open fuse out of its holder.
5. Install a new fuse.
6. Re-install the battery, and bottom case half.

REPLACEMENT PARTS

The following replacement parts are available for your multitester. Consult your retailer or the manufacturer for assistance.

PART NUMBER	DESCRIPTION
0002-2274	Instruction Manual
0044-0108	2 Amp 250 Volt Fuse
0038-1748	Black Test Lead Assembly
0038-1749	Red Test Lead Assembly

SPX SERVICE SOLUTIONS

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